Appl. No. 09/824,654   <u>PATENT</u>
Amdt. dated April 27, 2004
Reply to Office Action of October 27, 2003

<u>Amendments to the Claims:</u>

This listing of claims will replace all prior versions, and listings of claims in the application:

<u>Listing of Claims:</u>

1. (Original) A method for performing analytical reporting on top of a multidimensional data model built on top of a relational or multidimensional database, wherein the database operates in a computer system and provides returned values responsive to queries specified in a predefined query language, wherein the database supports the use of functions and operators to perform operations on values within the database, wherein the multidimensional data model includes a plurality dimensions organizing data as sets of values organized in a hypercube, wherein the method includes a user interface executing on a computer system operated by a human user, wherein the computer system executing the user interface includes a processor coupled to a memory, wherein the processor is further coupled to the user interface, data model, and the database, the method comprising the following acts:

displaying a reporting object that displays values selected by one or more axes of the multidimensional data model;

displaying a hierarchical view of at least a part of a hypercube in the multidimensional data model showing dimensions and dimension members of the hypercube;

using the user interface to associate a first dimension object with the reporting object; and

displaying a set of reporting objects, each corresponding to a member of the dimension, where the reporting object displays values of measures of the corresponding dimension member including multiple blocks synchronized along a common axis, nested sections, and breaks.

2. (Currently Amended) The method of claim 1 further comprising the acts of:
displaying an analysis user interface;
selecting a cell of said reporting object; and

Page 3 of 11

PATENT

utilizing a GUI tool to select an OLAP analysis action to be performed on the cell.

3. (Original) The method of claim 2 further comprising the act of:

selecting the OLAP analysis action to be drill down or drill up.

4. (Original) The method of claim 1 further comprising the acts of:

associating a specific member of the first dimension object with the first dimension object to select only the specific member when displaying the reporting object.

5. (Original) The method of claim 1 further comprising the acts of:

associating a second dimension object, nested under the first dimension object, with the reporting object; and

defining a filter to sort the second dimension object according to a specified criteria.

6. (Currently Amended) A computer program product for performing analytical reporting on top of a multidimensional data model built on top of a relational or multidimensional database, wherein the database operates in a computer system and provides returned values responsive to queries specified in a predefined query language, wherein the database supports the use of functions and operators to perform operations on values within the database, wherein the multidimensional data model includes a plurality dimensions organizing data as sets of values organized in a hypercube, wherein the method includes a user interface executing on a computer system operated by a human user, wherein the computer system executing the user interface includes a processor coupled to a memory, wherein the processor is further coupled to the user interface, data model, and the database, the computer program product being stored on ~~method comprising the following acts:~~ a computer readable medium having program code embodied therein, said program code further comprising:

program code executed by the processor for displaying a reporting object the displays values selected by one or more axes of the multidimensional data model;

program code executed by the processor for displaying a hierarchical view of at least a part of a hypercube in the multidimensional data model showing dimensions and dimension members of the hypercube;

program code executed by the processor for enabling using the user interface to associate a first dimension object with the reporting object; and

program code executed by the processor for displaying a set of reporting objects, each corresponding to a member of the dimension, where the reporting object displays values of measures of the corresponding dimension member including multiple blocks synchronized along a common axis, nested sections, and breaks.

7. (New) A computer-implemented method for building complex analytic reports on top of multidimensional data models, the method comprising:

providing a catalog of available reporting objects, wherein each reporting object is a graphical entity comprising a plurality of graphical areas, at least one of the plurality of graphical areas having:

zero, one or more axes, the axes fit for receiving one or more OLAP dimensions or levels, and determining a layout of the reporting object, number of instances for objects contained in the graphical area, and computation context for measures and formulas in each of the instances, and

zero, one or more containers, the containers fit for receiving a plurality of items including one or more OLAP dimensions, levels, measures, free text or other reporting objects, the plurality of items to be embedded into each instance of the reporting object, wherein multiple instances of the reporting object will be created depending on dimension members in the axes of the reporting object;

displaying a catalog of OLAP entities comprising dimensions, levels and/or measures;

creating a report using a first reporting object with no axis and one or more containers;

<u>PATENT</u>

allowing a user to select a reporting object from the catalog of available reporting objects, and placing the selected reporting object onto the report or onto a container area of a reporting object already included as part of the report;

allowing a user to select a dimension or level from the catalog of available OLAP entities and placing the selected dimension or level onto an axis area of a reporting object already included as part of the report;

allowing the user to select a dimension, level or measure from the catalog of available OLAP entities and placing the selection onto a container area of a reporting object already included as part of the report or onto the report itself, with the effect of inserting a cell containing the selected OLAP entity into the container; and

displaying a rendition of the report, wherein the number of instances of each reporting object is determined by dimension members in the axes of the reporting objects containing it directly or indirectly, wherein the layout of each instance is determined by its axes and contained reporting objects, and wherein the value displayed for any cell instance is determined with respect to its computation context, the computation context being determined by the dimension members that are mapped to its containing instances.

8. (New) The method of claim 7 wherein at least one of the reporting objects in the report is a section, the container of which contains at least two different reporting objects with the axes or containers of both contained reporting objects different from each other.

9. (New) The method claim 7 wherein at least one of the reporting objects in the report has both an axis and a container that in turn contains a complex reporting object with an axis.

10. (New) The method of claim 7 wherein the at least one of the plurality of graphical areas includes graphical information describing the nature, format and expected rendition of the reporting object to be used for rendering the report.

11. (New) The method of claim 7 wherein arbitrary sets of members of a dimension, or pre-existing calculated members, are placed in an axis, resulting in restricting the report to a subset of the available dimension members.

12. (New) The method of claim 7 further comprising:

selecting an existing reporting object in the report;

formatting the selected reporting object so as to create filters that apply on its computation context, thereby modifying the contents of its instances and the computation context of all its contained reporting objects.

13. (New) The method of claim 7 wherein a dimension member attribute is placed into a container or in an axis, thereby automatically adding the dimension to which this attribute applies into the axis of the reporting object.

14. (New) The method of claim 7 wherein at least one of the available reporting objects contains formulas that refer to the available OLAP entities, and the rendering of which is performed by computing each formula with respect to the axes and filters applied to the formula's direct and indirect containers.

15. (New) The method of claim 7 further comprising:

selecting an existing reporting object in the report; and

formatting the selected reporting object so as to create breaks or sorts thereby modifying the layout of its instances.

16. (New) The method of claim 7 further comprising:

displaying an analysis user interface;

selecting an instance of a cell in the report;

utilizing a GUI tool to select an OLAP analysis action to be performed;

retrieving a computation context of the cell instance as a function of the dimension members selected in the axes of the cell instance's direct and indirect containing reporting object; and

PATENT

performing the selected OLAP analysis action with respect to this computation context.